

## **REMARKS**

The Office Action mailed May 20, 2004, has been carefully considered. Reconsideration in view of the following remarks is respectfully requested.

### **Drawings**

FIG. 1 has been amended such that box 121 has been relabeled 139 for consistency with the specification, and the descriptive legend has been changed from “chordic converter” to “cordic converter” to thereby correct the misspelling of the term “cordic.”

FIG. 2 has been amended to re-route the connection 237 to the delay element 238, and to insert cordic converter 139 of FIG. 1 in its proper place in FIG. 2 for consistency with FIG. 1 and the remainder of the description. No new matter has been introduced. Approval of the corrections is respectfully requested.

### **Specification**

The specification has been amended in order to address minor typographical and other errors, and to be consistent with the aforementioned drawing changes. In addition, the sentence “Recognizing that multiplication is commutative, there is no difference whether quadrature shifting is performed on either input of mixers 115a, 115b,” has been added to page 6 and is discussed below.

**Subject Matter Indicated Allowed or Allowable**

Applicants gratefully acknowledge the indication of allowability of Claim 1, subject to the objections outlined in the Office Action. Claim 1 has been amended to address some of the objections. However, the clause “shifting one of the output measurement signal and input measurement signal” has not been changed because it will be appreciated that it is well known that a shift to one can be replaced with a shift to other without changing the outcome, given that, mathematically, the multiplication which mixers 115a and 115b are designed to perform is commutative as is well-known. Applicants respectfully submit that while this feature is trivial and would be readily recognized by those of ordinary skill in the art, in any case it is self-supporting by virtue of its appearance in originally-filed Claim 1, and therefore it cannot be deemed new matter. Further, the sentence “Recognizing that multiplication is commutative, there is no difference whether quadrature shifting is performed on either input of mixers 115a, 115b,” has been added to the specification in correspondence with the feature.

**Rejection(s) Under 35 U.S.C. § 102 Rejection**

Claim 3 was rejected under 35 U.S.C. § 102(b) as anticipated by Schanabl et al. (U.S. pat. no. 5,905,760). Applicants respectfully traverse this rejection.

Claim 3 recites a “data modulator responsive to the data signal for producing modulated signal components including a magnitude component and a periodic signal containing a phase component.” This feature is absent from Schanabl. Modulator 16 of Schanabl does not produce “modulated signal components including a magnitude component and a periodic signal containing a phase component.” Rather, the signals used in the feedback scheme in Schanabl are quadrature signals provided to quadrature demodulator 26, as for example described in col. 3,

lines 28 – 35. This is consistent with the Cartesian coordinates modulation system which Schanabl uses, and is unlike the polar coordinates system of Claim 3, which is characterized by “signal components including a magnitude component and a periodic signal containing a phase component.”

Claim 3 also recites “an amplifier responsive to the magnitude component and the periodic signal for producing a desired communications signal” and “feedback circuitry responsive to the communications signal and to the periodic signal for producing feedback signal components in quadrature relation, the feedback signal components including information about a phase difference between the communications signal and the periodic signal.” In Shanabl, amplifier 20 is shown as a two-port device—one input port and one output port. This underscores the distinction between the Cartesian-type system of Schanabl and the polar-type system of Claim 3. In the Cartesian system, the input signal provided to the amplifier is simply an unamplified, or smaller version of the output signal, and is a complete representation of the output signal, albeit on a smaller scale. In the polar system, the first instance of the final signal only occurs at the output of the amplifier. The amplifier itself is a three-port device whose inputs are necessarily separate, one (109) corresponding to an amplitude component and the other to a phase component of the data. Such separation is not characteristic in the conventional Cartesian type system disclosed in Schanabl.

Again this is because the Cartesian coordinates system of Schanabl does not produce the “signal components including a magnitude component and a periodic signal containing a phase component” characteristic of the polar coordinates system of Claim 3, and these components therefore cannot form the input signals to the amplifier or the feedback loop.

It will be appreciated that, according to the M.P.E.P., a claim is anticipated under 35 U.S.C. § 102(b) only if each and every claim element is found, either expressly or inherently

described, in a single prior art reference.<sup>1</sup> The aforementioned reasons clearly indicate the contrary, and withdrawal of the 35 U.S.C. § 102(b) rejection based on Schanabl is respectfully urged.

### **Rejection(s) Under 35 U.S.C. § 103 Rejection**

Claim 2 was rejected under 35 U.S.C. § 103(a) as unpatentable over Schanabl in view of Jones (U.S. pat. no. 5,894,496).

Claim 2 has been amended to recite “using a polar modulator to produce a phase-modulated signal and an amplitude signal,” and “combining the phase-modulated signal and the amplitude signal to produce an output signal.” As discussed above, the system of Schanabl is a Cartesian type system which does not separate the signals into the amplitude and phase components of the polar type system of the invention. This is evidenced for example by Schanabl’s use of a two-port amplifier device 20, as compared to the three-port device (107) of the invention.

According to the Manual of Patent Examining Procedure (M.P.E.P.),

To establish a *prima facie* case of obviousness, three basic criteria must be met. First there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in the applicant's disclosure.<sup>2</sup>

Jones fails to remedy the failure of Schanabl to teach or suggest a polar coordinate type linearization scheme in which the a phase modulated signal and an amplitude signal are

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<sup>1</sup> Manual of Patent Examining Procedure (MPEP) § 2131. See also *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

combined in the manner claimed, and from which linearization information is extracted to provide feedback in the form of in-phase and quadrature components representing a phase difference between the phase-modulated signal and the output signal. Thus, even if Jones were properly combinable with Schanabl, a contention which is not conceded Applicants, the combination of would not teach or suggest the presently claimed invention, and the rejection of Claim 2 based on same is improper and should be withdrawn.

Claims 4 – 7 were variously rejected under 35 U.S.C. § 103(a) as unpatentable over combinations of Schanabl ('760; '536), Jones, Liu et al. (U.S. pat. no. 6,493,409) and Wright et al. (U.S. pat. no. 6,697,436). Claims 4 – 7 depend from allowable Claim 3, as discussed above, and withdrawal of the rejection of Claims 4 – 7 is respectfully urged.

### **Conclusion**

In view of the preceding discussion, Applicants respectfully urge that the claims of the present application define patentable subject matter and should be passed to allowance. Such allowance is respectfully solicited.

If the Examiner believes that a telephone call would help advance prosecution of the present invention, the Examiner is kindly invited to call the undersigned attorney at the number below.


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<sup>2</sup> M.P.E.P § 2143.

Please charge any additional required fee, including those necessary to obtain extensions of time to render timely the filing of the instant Reply, or credit any overpayment not otherwise paid or credited, to our deposit account No. 50-1698.

Respectfully submitted,  
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